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Environment situation in the Former Yugoslav Republic of Macedonia

Note

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EXECUTIVE SUMMARY

The Former Yugoslav Republic of Macedonia (FYROM) gained independence in 1991. It applied for membership to the European Union in 2004 and was granted the status of candidate country in 2005, but no date was specified for the start of the accession negotiations.

Steady progress has been made on **aligning the environmental legislative framework to the EU *acquis***. However, a substantial amount of legislation has still to be enacted and implementation remains limited, while administrative capacity and financial resources are inadequate. Horizontal legislation (e.g. EIA, SEA) is relatively well advanced, progress has been made in the area of climate change (GHG inventory and CDM/JI national strategy), industrial pollution control, chemicals, GMOs, noise, forestry and health (Environmental Health Action Plan), and a new law on nature protection represented a major step for the *acquis* transposition. However, major efforts are still needed to ensure full transposition and implementation in these areas. Limited progress has been made in the area of air and water quality, especially due to insufficient institutional capacity and fragmented responsibilities. Although some progress has been reported, further significant implementation efforts are needed in the area of waste management. Environmental monitoring is inefficient, especially due to scattered competences between different Ministries and public bodies, and inspection, especially at municipal level, is poorly addressed.

Air quality is a significant problem, especially in urban areas. Industrial air purification and emission control systems are inefficient, energy use is inefficient and urban traffic pollution is high.

Water quality is seriously affected by agriculture and industrial activities, especially the metallurgical, chemical and mining industries. The main pollution source is however waste water. Most towns do not possess treatment plants, and effluent from industrial and mining facilities, livestock farms and landfills are uncontrolled. Only six treatment facilities are in place, some of which are not entirely compliant to the EU *acquis*. Connection to the public water supply is relatively high in urban areas (82-100%) and more scattered in rural areas (10-100%). Overall about 88% of households were connected in 2002. Connection to public sewage system is instead much lower, about 60%.

Waste management is one of the most serious environmental issues. The lack of suitable infrastructure hampers adequate waste disposal. There is only one licensed (but not *acquis*-compliant) landfill, about 50 non permitted landfills and thousands of illegal dumps. There are no incineration plants (except one for medical waste), no composting and few recycling facilities, and no proper hazardous waste management.

Biodiversity is very rich, and the country is considered one of the most important centres of endemism in Europe. About 7.3% of the territory is classified as protected, and this area is expected to increase to 12% by 2020. Nevertheless several threats to nature remains, due e.g. to lack of awareness, low institutional capacity, unsustainable agriculture, constant draining of wetlands, and uncontrolled urbanisation and industrialisation.

Soil erosion and drought are significant **natural hazards**.

As for **climate change**, the Kyoto Protocol was signed in 2004, while the first GHG inventory was prepared for the First National Communication on Climate Change in 2003. The main source of emissions is the energy sector – which also has the greatest potential for mitigation.

Key recommendations are:

- The country should build on previous progress in aligning its legislation to the EU *acquis*. Having introduced general and sectoral framework legislation, considerable effort is required for the development of detailed secondary legislation.
- It is critically important to build up the capacity of environmental institutions, including the MoEPP and its institutions. Of far greater concern, however, is the poor capacity of municipalities to implement basic environmental law. Strategies to enhance such capacity need to be developed.
- Air emission control measures and air quality monitoring will be essential.
- Water quality should be improved, especially by increasing the number and quality of waste water treatment plants and improve sewage connection. Also, monitoring should be improved, especially of groundwater.
- Waste infrastructures and collection system will need to be radically improved, i.e. creating *acquis* compliant landfills and recycling, composting and incineration facilities and developing safe management of hazardous waste.
- Better territorial planning, increased control over illegal hunting, fishing and logging, pollution reduction and the introduction of more sustainable agriculture practices should help avoiding potential biodiversity loss.
- Mitigation of the effects of drought and the development of a National Action Plan for Combating Desertification will be necessary.

1 INTRODUCTION AND BACKGROUND

The Former Yugoslav Republic of Macedonia (FYROM) is a landlocked country in the central part of the Balkan Peninsula. The population is approximately two million people (CIA, 2008), with a total area of about 25,700 km^2. Its territory is mainly mountainous marked by a central valley formed by the Vardar's river and framed by the Šara and Osogovo rivers. Three large lakes (Ohrid, Prespa and Dojran) lie on its southern borders, bisected by frontiers with Albania and Greece. They are well known for their scenic beauty and one of them, Ohrid, is considered to be one of the oldest lakes and biotopes in the world (ten Brink et al, 2007).

Formerly a mainly agrarian economy, the country experienced dramatic industrial growth and urbanization when subjected to central planning after World War II, at great expense to the nation's environment and natural resources. With little or no effective regulation, forests were cleared, pollutants were emitted, and waste was dumped into nearby water bodies or onto open land. The disintegration of the Yugoslav common market in the early 1990s led to an economic slowdown. Industries began to reduce output, thereby lowering environmental stress to some extent, although environmental controls remained poor. At the same time, growing urbanization reduced air quality, increased pressure on water supplies, and further exacerbated waste treatment and disposal problems (UNEP, 2000).

Figure 1: Map of Former Yugoslav Republic of Macedonia

Source: CIA, 2008

The Former Yugoslav Republic of Macedonia became an EU candidate country in 2005. Since then it has been attempting to adopt legislation in line with the EU *acquis* and address issues of implementation. This briefing provides a short overview of the current political situation in the country, its administrative capacity to implement the environmental *acquis* and the state of the environment across a wide range of different issues.

2 OVERVIEW OF STATE STRUCTURE AND POLITICAL SITUATION

2.1 The political situation in the Former Yugoslav Republic of Macedonia

Parliamentary democracy in Macedonia was established following the November 1990 elections. The Parliamentary Declaration of Sovereignty of 25 January 1991 and the Referendum on a Sovereign State of 8 September **1991 established the Former Yugoslav Republic of Macedonia (FYROM) as an independent state**.

Between February and August 2001 the country was on the brink of a civil war before it was pacified by the US and EU-sponsored **Ohrid Framework Agreement**. The agreement was brokered by the four major political parties in the country: two ethnic Albanian parties and two Macedonian parties. It strengthened the multi-ethnic character of the state through expanding the rights of ethnic minorities and proclaiming its territorial integrity and unitary character. Since then, the implementation of the Agreement has been a cornerstone of the return to stability.

However, in recent years **signs of instability** have been recurring. The national elections in 2006 for instance gave rise to worrying political developments as the Democratic Union of Integration, the largest Albanian party, boycotted the parliament after being left out of the new coalition government led by VMRO-DPMNE of Prime Minister Nikola Gruevski, and refused to participate in political dialogue and law-making.

In addition, **tensions between FYROM and Greece** have been rising. In April of this year, Greece vetoed FYROM's invitation to join NATO, arguing that the name 'Macedonia' could lead Skopje to make territorial claims over Greece's own northern province holding the same name. A nationalist backlash followed in FYROM, and early elections were called for. Nikola Gruevski won the elections, but these were marked by ethnic violence and struck a blow to the country's aspirations to join the EU and NATO. Enlargement Commissioner Olli Rehn warned that the unsolved 'name dispute' with Greece could negatively affect the country's EU agenda. Furthermore UN-sponsored talks to solve the dispute seemed to make no progress at that time. However, the country's President Branko Crvenkovski and Olli Rehn signaled in early October that the 'name dispute' between Skopje and Athens was nearing a solution.

2.2 Government structure and environmental institutions

Since 1991, politics in FYROM occurs within the framework of a **parliamentary representative democratic republic**, whereby the Prime Minister is the head of government, and of a pluriform multi-party system. Executive power is exercised by the government. Legislative power is vested in both the government and parliament. With the passage of a new law and elections held in 2005, local government functions are divided between 84 municipalities. The capital, Skopje, is governed as a group of ten municipalities collectively referred to as 'the City of Skopje'. Municipalities in the country are units of local self-government (LSGU). Neighbouring municipalities may establish cooperative arrangements.

The **Ministry of Environment and Physical Planning (MoEPP)**, is the competent state body with regard to the development and implementation of policies in the area of environmental protection and improvement in the different media and areas: air, water, soil, solid waste, biological diversity and other natural resources, and ozone layer protection. The MoEPP needs to enhance capacity and it is negotiating with the Ministry of Finance for additional capacity. The work of the MoEPP has recently focused on the drafting of laws and less on enforcement due to budget constraints.

The MoEPP is not the only Ministry dealing with environmental matters. Bodies within the **Ministry of Agriculture, Forestry and Water Economy (MAFWE)**, **Ministry of Health (MoH)**, **Ministry of Transport and Communication** and the **Ministry of Science** all have competences within the environmental field. This scattered distribution of competences is mainly the result of historic developments, especially given than the MoEPP is very young compared to the other Ministries.

According to the 'Law on Local Self-Government'[1], the **local self-government units (LSGU)** are competent for **regulation and performance** of affairs of public interest of local relevance, specified by law. The Law also specifies the list of exclusive competences of the local self-government units, including **environment and nature protection, protection from impacts for noises and unionised radiation, sewerage and treatment of public waste water, and collection, transport and treatment of municipal solid waste and technological waste**. Given the fact that the decentralisation is a very recent process, many weaknesses still need to be resolved – such as local financial resources, lack of technical capacity for inspection of 'Permit B' installations, roles and the distribution of responsibilities between the City of Skopje and its 10 municipalities.

Environmental monitoring activities are not centralized, as competences are fragmented according to the type of monitoring. In general, the MoEPPs **Environmental Protection Administration** (**EPA**) and bodies covered by other Ministries such as the MoH and the MAFWE are responsible for monitoring activities of water and air quality and noise nuisance. Other monitoring activities are carried on by the Hydro-Meteorological Directorate (HydroMet) of the MAFWE, the Public Institute for Health Protection of the MoH, the Cities Health Institutes, the Hydro-Biological Institute and other public bodies.

The **State Environment Inspectorate** (**SEI**) under the MoEPP is the central competent authority for **inspection** and supervision over the **enforcement** of laws and regulations in the area of environment. However, inspectorate functions also exist in other Ministries and in local government. The inspectorates are subject to significant resource constraints.

[1] Official Gazette of the Republic of Macedonia No. 5/02.

2.3 The Former Yugoslav Republic of Macedonia and relations with the EU

FYROM has had contractual relations with the EU since 1996, when it became eligible for assistance from the PHARE programme. In 1997 FYROM signed, among others, a **Cooperation Agreement**, which was in force until 2004. In April 2001 the EU and FYROM signed a **Stabilisation and Accession Agreement (SAA)**, which entered into force on 1 April 2004. The SAA provides the legal framework for relations between the EU and FYROM for the entire period prior to a possible future accession. FYROM applied for membership of the EU in March 2004 and was granted the status of candidate country in December 2005, but **no date was specified for the start of the accession negotiations**.

FYROM still has to fulfill a number of basic accession criteria (the Copenhagen criteria) before formal talks can begin. The **main challenges in implementing the necessary reforms**, as identified in the January 2006 Council Decision on the European Partnership with FYROM[2], include:

- Implementing fully the Ohrid Framework Agreement and the Stabilisation and Association Agreement;
- Implementing the reforms in the judicial system and the police;
- Upgrading the fight against corruption;
- Pursuing vigorously the economic reforms; and,
- Improving the functioning of the public administration and its capacity to implement the Community acquis.

In the **environmental field** the following **short term priorities** have been identified:

- Improving the implementation of legislation and environmental monitoring;
- Strengthening the Environmental Inspectorate and other enforcement bodies. Establishing a credible enforcement record. Ensure that fines and other sanctions are effectively applied and have a dissuasive effect;
- Strengthening administrative capacity at national and local levels and start the preparation of strategic plans, including financial strategies;
- Developing an environmental investment strategy based on estimates of the cost of alignment.

Over the past decade the EU has delivered substantial **support** to FYROM through various programmes such as ECHO, Obnova, PHARE or the Emergency Response Programme. In 2001 CARDS was launched to focus on political, institutional and economic transition. In 2007 the new Instrument for Pre-accession Assistance (IPA) has replaced CARDS and the other pre-accession programmes. The total **assistance of the EU to the country since 1992 amounts to more than €870m**.

[2] 2006/57/EC: Council Decision of 30 January 2006 on the principles, priorities and conditions contained in the European Partnership with the former Yugoslav Republic of Macedonia and repealing Decision 2004/518/EC.

2.4 Implementation of the environment and health *acquis*[3]

Steady progress has been made on developing the legislative framework in the field of the environment, but a substantial amount of legislation has still to be enacted and implementation of the legislation remains limited. Administrative capacity and financial resources remain inadequate. Very significant efforts are needed, including substantial investment and strengthened administrative capacity, for the implementation and enforcement of the legislation (Commission, 2007).

In general the alignment in the area of **horizontal legislation is well advanced**, but great efforts are needed as far as implementation is concerned. The legislation on public access to environmental information and Environmental Impact Assessment (EIA) has been further aligned with the *acquis*. A certain amount of legislation has still to be enacted in order fully to align the provisions with the *acquis*, especially the Directives on Strategic Environmental Assessment (SEA) and public participation. (Commission, 2007; Vermoote et al, 2007).

In the area of climate change progress has been made. A national strategy for implementing the clean development mechanisms under the Kyoto Protocol has been adopted and a draft inventory on greenhouse gas emissions for 2000 as a baseline year has been prepared. Furthermore, two subsequent national reports on climate change, each encompassing an action plan, have been adopted.

Limited progress has been made in the area of air quality. Implementing legislation on assessing ambient air quality has been adopted. Amendments to the law on ambient air quality have been enacted in order to bring the penalty provisions into line with the law on misdemeanours. Preparations in this area are moderately advanced. Until December 2006, there was no single competent body to deal with air quality. In general, the MoEPP and other important stakeholders face insufficient institutional and human capacity for the transposition and implementation of EU's air related objectives (Commission, 2007; Vermoote et al, 2007).

Also **in the area of water quality progress has been limited**. However, the adoption by the government of a **new law on waters** which allocates clear responsibilities for water management to the MoEPP might provide a good basis for further progress in this area, although it remains to be seen whether the problems resulting from the existing fragmentation of responsibilities and functions will be overcome in the short term (Commission, 2007; Vermoote et al, 2007).

Although **some progress can be reported, further significant implementation efforts are needed in the area of waste management**. Bylaws implementing the law on waste management have been adopted, among others dealing with handling of asbestos waste; waste management, treatment of polychlorinated biphenyl (PCB) waste and management of raw materials waste. Nevertheless, many more bylaws need to be adopted in order to align legislation with the *acquis*. In March 2008 the national Waste Management Strategy (2008-2020) was adopted. The Ministry has undertaken several activities to tackle the problem of illegal waste dumps but has not yet begun to issue integrated permits for operating waste dumps. Preparations in this area are still at an early stage (Commission, 2007; Vermoote et al, 2007).

[3] Please note that this section on the implementation of the environment acquis draws on reports or documents which have been published in 2007.

Some progress has been made in the area of industrial pollution control and risk management. There has been considerable progress in the transposition of the IPPC Directive, with legislation which divides installations into 'A' and 'B' with permitting and inspection functions split between MoEPP institutions and municipalities. Several major 'A' installations have been issued with IPPC adjustment permits, and the public has been given the opportunity to participate in the permit process. The State Environment Inspectorate listed 140 main polluters in a national register of air polluters and it performs inspections once a month and has sanctioned several polluters in accordance with the 'polluter pays' principle. However, there are severe weaknesses at municipal level and this has delayed implementation of legislation. A national strategy for protection and rescue has yet to be adopted. The law on environment requires operators of industrial sites to prepare contingency plans, but this requirement has not been implemented in practice. Some provisions of the Seveso II Directive have still not been fully transposed. Thus while there has been some positive legal developments, the capacity of the Ministry and municipalities to implement industrial pollution control and risk-management measures is still inadequate (Commission, 2007 and Vermoote et al, 2007).

For **nature protection**, the adoption of the **new law on nature protection** in 2004 represented a major step in the legal transposition of the EU's nature and biodiversity *acquis*. However, major efforts are needed to adopt necessary secondary legislation and to achieve the legal objectives on the ground. Major threats to biodiversity remain (Vermoote et al, 2007).

Some progress can be reported in the area of chemicals, GMOs, noise, forests and **environmental health**. A law on chemicals has been adopted. However, the preparations are at an early stage in this area. The law on noise in the environment has been enacted together with amendments to the laws on forests and on forest reproductive materials. The strategy for sustainable development of forestry, with an Action Plan for the period 2007-2009, has been adopted (Commission, 2007). A National Environmental Health Action Plan (NEHAP) has been adopted.

The major weakness in the field of environmental **monitoring** at the moment is the **scattered competences between different Ministries and Institutes.** This results in an inefficient allocation of resources. A first step into the positive direction is the set up of the Division of Monitoring at EPA which brings together all monitoring activities at the MoEPP. However, the MoEPP has established the Macedonian Environmental Information Centre which undertakes extensive communication work with the public and other stakeholders. The quality of the monitoring work at the MoH departments and MAFWE departments, especially in the field of drinking water are regarded as strengths (Vermoote et al, 2007).

The State Environment Inspectorate and other inspectorates are subject to significant resource constraints. In particular the **inspection at municipal level is extremely poorly addressed**. However, on the legislative field progress has been made, as the law on environment has been amended to bring the penalty provisions into line with the law on misdemeanours. The amendments empower the central and local environmental inspectorates to impose directly the penalties prescribed in the law on environment (Commission, 2007; Vermoote et al, 2007).

3 OVERVIEW ON THE STATE OF THE ENVIRONMENT

3.1 Air Quality

Air pollution in FYROM is a significant problem. Despite the low level of industrial development, **industrial air purification and emission control systems are ineffective, energy use is inefficient and urban traffic pollution is high** (Carter, 2002). Air quality is particularly poor in urban areas, especially in the cities of Skopje (where most of the country's heavy industry is concentrated), Veles, Bitola and Tetovo. At regional level, air quality is worse in the Pelagonian, Southwest, Skopje and Polog regions[4].

Air pollution in large urban areas has been reported to pose serious health threat to the population, owing a dramatic increase in chronic respiratory diseases, allergies and ailments of internal organs (Kocubovsky, 1995). Furthermore, the deposition of contaminant particles around industrial plants has been reported to have caused a deterioration of livestock health and affected local flora and fauna (Petrovska, 1998).

Most of the emissions are caused mainly by industries (e.g. metallurgical plants and thermal power plants) and traffic (UNEP 2000).

Table 1 presents an overview of air pollutants by sector in 2004 – the main sources are highlighted and in bold. SO_2 emissions are dominated by electricity production, which relies on the use of poor quality lignite, with high sulphur content (ten Brink et al, 2007). Traffic, especially in the winter months, is the main cause of the high concentration of heavy metals in urban areas and, together with electricity production, is one of the main sources of NO_x. CO is mainly released by combustion plants and road transport, while the main source of NH_3 is agriculture.

Under the framework of the CORINAIR programme in 2005, the country established an inventory for emissions of air substances in different sectors. Analyses of the period 2002-2005 showed a decrease of emissions in SO_2, reflecting falls in the level of production activity (ten Brink et al, 2007).

Table 1: Emissions per sector in tonnes per year (2004)

	SOx	NOx	CO	TSP*	NMVOCs	NH3
Public power, cogeneration and district heating plants	**91,863**	**13,100**	385	4675	1,690	0
Commercial, institutional and residential combustion plants	1,062	1,502	**41,443**	1,533	3,508	0
Industrial combustion	6,450	2,744	552	1,209	211	0,5
Production processes	356	4,933	9,004	22,278	1,108	0
Extraction and distribution of fossil fuels	0	0	553	0	425	0
Solvent use	0	0	0	0	8,484	0
Road transport	775	**9,200**	**40,927**	0	8,824	0
Other mobile sources and	251	2,069	2,025	225	969	0,28

[4] Based on 2004 data from MOEPP - Land registry of air emissions.

machinery						
Waste treatment and disposal	3.4	21	5.3	0.8	1.1	0
Agriculture	0	0		0	0	**7,384**
Natural sources	38,3	169	4,841	0	98,866	1,382
Total	**100,799**	**33,737**	**99,735**	**29,921**	**124,087**	**8,824**

*TSP = Total Suspended Particulate matter

***Source**: Data from MOEPP 2005a*

3.2 Water and waste water

The country's rivers are exposed to **contamination from agriculture and industrial activities,** especially the metallurgical, chemical and mining industries. Water quality is also seriously affected by the **lack of waste water treatment**, as most towns do not possess treatment plants, and effluent from industrial and mining facilities, livestock farms and landfills has been largely uncontrolled (Carter, 2002).

Dinking water. The percentage of **connections to public water supply** systems is **relatively high in urban area**s – ranging from 82% (Berovo, Kumanovo) to 100% (Skopje-Centre municipality). The connection **in rural areas instead varies substantially**, from 10% up to 100%. According to the 2002 Census, overall the percentage of households connected to public water supply systems was **88%**.

Surface and underground water. The country has a very rich network of rivers, the status of some of which is poor. **Urban wastewater is the main pollution source,** discharged directly into the rivers and streams without treatment. Other important pollution sources are wastewater from chemical, food processing, ferrous and leather industry as well as from animal farms, increasing organic pollution (e.g. from food processing and slaughterhouses) and heavy metals content (Cr, Fe, Cd, Pb and Zn). Severe organic and microbiological contamination, as well as high levels of toxic elements (Cd, Cr, Pb and Zn) have been noted in the Vardar river, which supplies 75% of the country's total water resources (JPPUP, 1995) and is also the major recipient of all types of wastewater (communal, industrial and agricultural). The quality of reservoirs which provide drinking or industrial water (Mavrovitsa, Strezhevo and Turiya) has been worsened by natural eutrophication and, in particular, by inappropriate fish stocking and exploitation.

Surface water quality is monitored by the RHI, and has been recently modernized, but groundwater monitoring, however, was stopped in 1981 due to a lack of financial resources. This area is the weakest point in the Macedonian monitoring system.

athing water. There are three important lakes in the country: Ohrid Lake, which represents the most significant lake ecosystem in Europe (protected by UNESCO), Prespa Lake, which is the second largest natural lake, and the small tectonic Dojran lake. The status of Ohrid Lake is slightly better than the other lakes, nevertheless it is still affected by pollution from waste water. Efforts have been made to collect waste water to by-pass discharge to the lake, but concern remains over discharges from the Albanian shore. Prespa Lake is experiencing a reduction of its water level and its subjected to increasing eutrophication. The status of the Doyran Lake is the most alarming. Since 1988, the level of the water has drastically fallen, with concerns over abstraction for agriculture on the Greek side, and the lake has experienced accelerated eutrophication. Samples collected between 1997 and 2005 did not meet bathing water physical-chemical standards.

***Waste water*.** Only **60% of households are connected to the public sewage system**, while 21% use septic tanks and 12% discharge their wastewater directly. Connection to the public sewage system is relatively low, especially considering the higher connection to the water supply system (close to 90%). **Six water treatment plants** are in place: M. Brod, Kumanovo, Ohrid-Struga, Resen, Dojran and Sv.Nikole. Overall they can serve about 280,000 person equivalent (p.e.), but not all of them are entirely compliant with the requirements of the UWWT Directive. No data are available on the urban wastewater quality, due to lack of systematic monitoring and of legal enforcement.

Several investment plans in wastewater treatment management are currently managed by MoEPP, including waste water infrastructure financing projects through national and international funds (from Switzerland, Austria, Germany etc).

3.3 Municipal and hazardous waste

Waste management is **one of the most serious environmental issues** in the country. The lack of suitable infrastructure hampers adequate waste disposal in general and disposal of hazardous waste in particular. There is only **one licensed (though not *acquis*-compliant) landfill** in the country and around a thousand illegal dumps. There are **no incineration plants** (except for medical waste), **no composting and few recycling facilities** (MEPP, 2008). Furthermore, tasks and responsibilities on the waste management field are in practice split among several institutions in the country. Municipalities are formally responsible for waste management, but only a few of them have appointed the responsible divisions/persons in their administration. Across other institutions these also have insufficient human resources, knowledge and experience to develop and implement all the relevant legislation, standards, instruments and investments to establish an integrated waste management system. Also the real costs of service delivery are not fully recovered and the regulation of the system does not enable the 'polluter pay' principle to be enforced. The financial situation of public enterprises is getting worse, additionally due to the decline of the economy. However, in March 2008 the country adopted the Waste Management Strategy of the Republic of Macedonia (2008-2020)[5], which aims to address these problems.

Data on the generation of waste in the country are provided in Table 2. Note that it is estimated (2008 Waste Management Strategy) that waste quantities will rise by 1.7 % per year for the next 10-12 years.

Table 2: Types of waste produced (tonnes per year)

Type of waste	Tonnes per year
Municipal waste	420,000
Commercial waste (constituents similar to	150,000

[5] See: http://www.moepp.gov.mk/WBStorage/Files/Waste%20Management%20Strategy%20of%20the%20RM%202008-2020.pdf

those in household waste)	
Waste from healthcare institutions	1,000
Construction and demolition waste	500,000
Industrial non-hazardous waste	2,120,000
Industrial hazardous waste	77,500
Waste from mining	17,300,000
Agriculture waste – animal by-products	4,900,000
Agriculture waste – plant by-products	550,000
Used tyres	5,000
Used mineral oils	8,000
End-of-life vehicles	17,500
Used accumulators	3,500
Total (approximate)	26,000,000

Source: 2008 Waste Management Strategy

Municipal waste. About 420,000 tonnes of municipal waste were produced in the country in 2008, i.e. about 204 tonnes per capita. Data from 2004 reveal that, while in urban areas the **waste collection system** covered 100% of the population, in rural areas only the 10% was covered. The **average coverage was 70%** (ten Brink et al, 2007).

97% of municipal waste is landfilled (MoEPP, 2005a). Most of the larger landfills are located near urban settlements, but locations have often been selected without any consideration of the environmental and geological conditions of the site (Carter et al, 2002). The Drisla landfill, serving the Skopje region, is the only licensed landfill, although not compliant with EU legislation. Another 54 municipal landfill sites are identified, but are not permitted. Co-disposal of hazardous waste and medical hazardous waste occurs at most of them, and requirements for sanitary operation and environmental protection are not met. In most cases, especially in rural areas, the collected waste is simply dumped on open areas. As a result thousands of dumpsites have been created in quarries, pits and in the natural landscape (ten Brink et al, 2007). Methane emissions from landfills are not collected and, in 2002, were responsible for the release of 787 kilotonnes of CH_4 in the atmosphere[6]. By the end of 2005 activities were undertaken for clearing of illegal dumps at nine locations, and others were planned (REReP, 2006). Furthermore, in 2005 the development of two regional landfills serving about 400,000 people in the north-east and central regions of the country was agreed.[7]

[6] Macedonia's GHG National Inventory Summary Report, FINAL VERSION (2006); Preparation of the GHG Inventory for the Second National Communication under UNFCCC

[7] http://www.ear.eu.int/publications/main/pub-reports_quarterly_2005_july-september.htm#FORMER YUGOSLAV REPUBLIC OF MACEDONIA5

Only 3% of municipal waste is recycled (MoEPP, 2005a). Current recycling activities are performed by the informal sector without government intervention and without cost to the inhabitants. The commodities recycled are paper and cardboard, metal, car batteries, and to a certain extent PET. There are small-scale composting or anaerobic digestion facilities aimed at the degradation of agricultural wastes and especially manure. Only one small facility, a pilot project in Zrnovci, is using the organic fraction of Municipal Solid Waste (MSW) as a basic material for compost production.

No incineration facilities for the disposal of solid waste exist in the country, except partially for medical hazardous waste at the Drisla landfill site. Furthermore, **no system is in place for** the collection and the processing of **used engine oils** and components, and most of these are landfilled, burned or spilled irregularly. Most **used tyres** (about 5,000 tonnes per year) are currently landfilled, and there is no organized collection of **end-of-life vehicles**. There is also no capacity at local laboratories to identify the **PCB or PCT** contents in solid wastes. **Construction and demolition waste** (ranging from 460,000 to 500,000 tonnes/year), is generally landfilled with non-hazardous waste, although this may also contain hazardous constituents.

***Hazardous waste*.** There is **no proper hazardous waste management system** in place within the industrial sector meeting any international standard. There is no systematic recording of generated hazardous waste, and hazardous waste generators tend to mix it with non-hazardous waste. Approximately 900-1,000 tonnes of hazardous medical waste are produced each year, but only about 35% of it is incinerated (in the Drisla landfill site), while the rest is landfilled. The EU CARDS 2006 programme financed a project to assist the country in the establishment of an integrated, environmental sustainable healthcare risk waste management system.

***Contaminated sites*.** Many mining and processing industries in the country ceased their activities in the transition period, and their on-site waste landfills and dumps were abandoned, and often never cleaned up. **16 major industrial contaminated sites have been identified**. The EU CARDS 2006 programme 'Development of remediation plans with financial requirements for elimination of industrial hotspots' aimed to assist the country in the elimination of industrial hotspots through the development of remediation plans.

Under the 2008 Waste Management Strategy, the government aims to **improve waste management** through the following actions:

- harmonisation of the policy and legislation on waste management;
- establishment of effective institutional and organisational arrangements in all phases of implementation of the new integrated waste management system;
- strengthening human resources and capacity in the public and private sector;
- introduction of stable financial resources and adequate economic mechanisms to assure full cost recovery;
- raising public awareness and awareness of all stakeholders;
- establishing the data collection/information system;
- establishing a contemporary technical waste management system;

- application of efficient and cost-effective techniques for the management of segregated waste streams;
- introduction of landfills for hazardous and non-hazardous waste and other facilities for final disposal;
- progressive closing down and/or remediation of existing municipal dumpsites and/or industrial 'hot-spots'.

3.4 Biodiversity

FYROM has a **remarkable wildlife diversity** which reflects the varied relief, geology, natural history and human influence. More than 3,5000 vascular plants (150 of which endemics) have been registered, along with 78 species of mammals, 330 types of birds, 31 reptiles and 55 species of fish (Kolčakovski 1997). The Red List of endangered plant species within Macedonia has yet to be prepared, but it is considered that about 10% of the higher plants species are threatened (ten Brink et al 2007). The fauna also reveals a high degree of taxonomic diversity, which includes more than 9,000 species, 674 of which are endemic – making the country **one of the most important centres of endemism in Europe**.

Nature is though under threat by lack of citizen's awareness, low institutional capacity, lack of strategic planning, outdated technology, unsustainable agriculture practices, draining of wetlands, steady reduction of forests, illegal hunting, continuing and increasing use of chemicals to eliminate unwanted insects, and uncontrolled urbanisation and industrialisation. The higher altitude habitats are instead less exposed to human activities (MoEPP, 2006).

Forest area accounts for about 37% of the territory, and most of it (90%) is owned by the state. Timber harvesting is often considered to be managed rather inefficiently. In the pre-mountain (subalpine) regions forests are almost destroyed, due to desiccation, fires, land drainage, mining and other anthropogenic activities like building construction, expansion of tourist settlements, road infrastructures and artificial lakes.

Grasslands ecosystems also occupy a large part of the country, and are expanding in some areas due to forest degradation and abandonment of agriculture land. Grasslands however are under anthropogenic pressure from agriculture and mining activities.

Floral and faunal components of the **mountain ecosystems** are not generally endangered. Mountain ecosystems within the three national parks of the country (Galichitsa, Mavrovo and Pelister) are protected by specific legal regulations. Mountain ecosystems however are under pressure due to overgrazing, the uncontrolled removal of plant species, and the construction of ski-lift and other infrastructures.

Lake and watershed ecosystems are very rich in terms of biodiversity, but their state is alarming. This includes the three natural lakes (Prespa, Ohrid and Dojran) and the developed river network, especially the watershed of the Vardar River. The Vardar valley is an important area for bird migration, and the relict lakes are among the major centres of faunal endemism. Pollution from wastewater, industrial agricultural pollution, and a lowering of the water level in some of the lakes are among the highest pressures, leading to increased pollution and eutrophication.

Wetland vegetation, which used to form large areas of swamps and marshes within all the valleys of the country, experienced great changes under past drainage regimes which converted most of these ecosystems into arable land. Impacts to most of the swamps and marshes have caused a reduction in the populations of all amphibians, as well as individual species of other invertebrate and vertebrate groups.

***Protected Areas*.** In the past 60 years the size of protected areas in the country has increased. In 2007 the network of protected areas covered 187,770 hectares, i.e. 7.3% of the national territory (ten Brink et al, 2007). More than half of this area belongs to three national parks Mavrovo, Pelister and Galicica. The country is also working on the development of Emerald Network of Areas of Special Conservation Interest under the Bern Convention which, after accession, will become part of the Natura 2000 Network. Other international initiatives for nature protection are also ongoing, such as the development of an indicative map of Pan-European Ecological Network in South-East Europe, and the IUCN Green Belt initiative. However, the present status of species protection in the country is at a very low level. In the country, neither cadastres of protected areas and species exist, nor action plans. The management of transboundary habitat networks is lacking, although some efforts are being made, e.g. on the management of lakes aquatic habitats with neighbouring countries.

According to the Spatial Plan of FYROM, there are about 265 registered sites which, until 2020, should be put under different protection status, covering about 300,000 ha or about 12% of the land surface. The registered sites reflect proposals for proclamation of areas under the national legislation that are harmonized with IUCN categories in the new law on nature protection, but they are not fully in correspondence with NATURA 2000.

3.5 Natural hazards

The region is **seismically active** and has been the site of destructive earthquakes in the past. Most recently, in 1963 Skopje was heavily damaged by a major earthquake, killing over 1,000 people.

Soil erosion is a key problem, which has been worsened by earlier inadequate practices in arable farming, grazing management and deforestation. There are high losses of topsoil, humus and nutrients from the agricultural land located on the steep slopes. Torrent erosion is also a significant problem as well as landfalls in the western part of the country (MoEPP, 2005b). According the European Environment Agency (2005), the country, together with Serbia, Montenegro and Albania, is in the 'red zone of water erosion in Europe'. The country's Erosion Map reveals that 96.5% of the total area is subject to erosion. The total annual production of erosive materials is 685 m^3/km^2/year, half of which is transported and a further half deposited into natural lakes and artificial reservoirs (MoEPP, 2005b).

While not affected by significant flooding, the country frequently suffers **drought and water shortages** causing many problems in agriculture, forestry, and water management. Some analyses show a 50-60% decrease in crop production in non-irrigated areas, as a result of drought, especially in the eastern parts of the country. Forest drying and decrease of forest growth are current phenomena observed in the forestry sector. Furthermore, drought has a direct impact on the quantity and quality of the water artificial reservoirs and natural lakes. According to MoEPP (2005b) mitigation of the effects of drought is one of the priorities at the country level, as well as the development of a National Action Plan for Combating Desertification

3.6 Climate change

The country **ratified the Kyoto Protocol in 2004**. According to its fist greenhouse gases (GHGs) inventory, the country was responsible for the emission of **15.08 million tonnes CO2-eq of GHGs in 1998, of which over 74% came from the energy sector**, followed by agriculture (10%), waste (>8%), industrial processes (7%), and land use change and forestry (<1%).

Climate change in the country is expected to cause negative effects on soil production, causing degradation, desertification, and further soil erosion. The change in temperature regime and perturbation of precipitation distribution over the year will cause disturbances to ecosystems. Considerable movement of plant and animal species in a south-north direction, as well as along the vertical gradient is expected. According to hydrological analysis, the most vulnerable regions will be the eastern and south-eastern parts, while the most vulnerable water economy sectors are water supply and irrigation (MoEPP, 2005b).

The vulnerable sectors where **adaptation** measures have been proposed by the First National Communication on Climate Change are: agriculture, land-use, land-use change and forestry, biodiversity, hydrology and water resources, and human health.

On the **mitigation** side, according to the First National Communication on Climate Change, the sector with highest potential is the energy sector. However, effective national planning in order to attain mitigation of GHG emissions is limited, mostly due to the lack of financial resources and the low potential to attract foreign investment. In addition, insufficient communication between the ministries, insufficient expertise and preparedness to use new technologies, low awareness, different stakeholders' interests etc., have been identified as constraints.

4 RECOMMENDATIONS

The key recommendations are the following:

The country should build on previous progress in aligning its legislation to the EU *acquis*. This process needs to be both ambitious and realistic to ensure that laws once adopted are implemented. Having introduced general and sectoral framework legislation, considerable effort is required for the development of detailed secondary legislation.

It is critically important to build up the capacity of environmental institutions. The MoEPP and its institutions (such as the State Inspectorate) have improved capacity, but this is still not sufficient. However, of far greater concern is the poor capacity of municipalities to implement basic environmental law. Strategies to enhance such capacity need to be developed.

Although the MoEPP has consolidated its role on environmental issues, it is important that legal development and capacity enhancement of other relevant ministries and bodies is also addressed.

Air quality is poor, especially in urban areas, and needs to be improved. Improved emission control measures and monitoring will be essential. This will need to be taken forward with the development of implementation of IPPC with sensible plans for the introduction of BAT and for adequate planning for other stationary and for mobile sources through development of air quality management planning.

Water quality should also be improved. A key priority will be to increase the number and quality of waste water treatment plants and improve sewage connection – as this is currently the main source of pollution, and existing infrastructure is clearly inadequate. Also, monitoring should be improved, especially of groundwater.

Waste management will need to be radically improved. Existing landfills should be made *acquis* compliant, or in some cases closed or re-located, and illegal dumps should be cleaned up. Recycling is currently very low (3%) and should be increased. The installation of appropriate infrastructure for recycling, composting and incinerating, as well as a proper system for hazardous waste and a suitable collection system will be imperative.

Although the size of the protected natural areas is planned to be increased, measures should be put in place to avoid that the quality of biodiversity is actually threatened. Better territorial planning is needed, as well as increased control over illegal hunting, fishing and logging, and the introduction of more sustainable agriculture practices.

Mitigation of the effects of drought has been identified as one of the priorities at the country level, as well as the development of a National Action Plan for Combating Desertification.

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